[Attachment A to Resolution No. R4-2005-XXXX

Proposed Amendment to the Water Quality Control Plan – Los Angeles Region

to Incorporate the

Total Maximum Daily Load for Toxicity, Chlorpyrifos, and Diazinon in the Calleguas Creek, its Tributaries and Mugu Lagoon

Proposed for adoption by the California Regional Water Quality Control Board, Los Angeles Region on 7 July, 2005.

TENTATIVE

Amendments

Table of Contents
Add:

Chapter 7. Total Maximum Daily Loads (TMDLs)

7- Calleguas Creek Watershed Toxicity TMDL

List of Figures, Tables, and Inserts
Add:

Chapter 7. Total Maximum Daily Loads (TMDLs)
Tables
7-16 Calleguas Creek Watershed Toxicity TMDL
7-16.1. Calleguas Creek Watershed Toxicity TMDL: Elements
7-16.2. Calleguas Creek Watershed Toxicity TMDL: Implementation Schedule

Chapter 7. Total Maximum Daily Loads (TMDLs)
Calleguas Creek Watershed Toxicity TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on [Insert date].

This TMDL was approved by:

The State Water Resources Control Board on [Insert date].
The Office of Administrative Law on [Insert date].
The U.S. Environmental Protection Agency on [Insert date].

Table 7-16.1. Calleguas Creek Watershed Toxicity TMDL: Elements

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Problem Statement	Discharge of wastes containing chlorpyrifos, diazinon, other pesticides and/or other toxicants to Calleguas Creek, its tributaries and Mugu Lagoon cause exceedances of water quality objectives for toxicity established in the Basin Plan. Elevated levels of chlorpyrifos have been found in fish tissue samples collected from a segment of Calleguas Creek. Chlorpyrifos and diazinon are organophosphate pesticides used in both agricultural and urban settings. Excessive chlorpyrifos and diazinon can cause aquatic life toxicity in inland surface and estuarine waters such as Calleguas Creek and Mugu Lagoon. The California 2002 303(d) list of impaired waterbodies includes listings for "water column toxicity," "sediment toxicity," chlorpyrifos in fish tissue," and "organophosphate pesticides in water" for various reaches of Calleguas Creek, its tributaries and Mugu Lagoon.
Numeric Targets	This TMDL establishes a numeric toxicity target of 1.0 toxicity unit – chronic (1.0 TUc) to address toxicity in reaches where the toxicant has not been identified through a Toxicity Identification Evaluation (TIE) (unknown toxicity). TU_C = Toxicity Unit Chronic = 100/NOEC (no observable effects concentration) A sediment toxicity target was defined in the technical report for reaches where the sediment toxicant has not been identified through a TIE. The target is based on the definition of a toxic sediment sample as defined by the September 2004 Water Quality Control Policy For Developing California's Clean Water Act Section 303(d) List (SWRCB). Chlorpyrifos Numeric Targets (ug/L) Freshwater: Chronic (4 day average) 0.014; Acute (1 hour average) 0.025 Saltwater (Mugu Lagoon): Chronic (4 day average) 0.009; Acute (1 hour average) 0.02 Diazinon Numeric Targets (ug/L) Freshwater: Chronic (4 day average) 0.10; Acute (1 hour average) 0.10 Saltwater (Mugu Lagoon): Chronic (4 day average) 0.40; Acute (1 hour average) 0.82

TENTATIVE

<table>
<tr><th>TMDL Element</th><th>Calleguas Creek Watershed Toxicity TMDL</th></tr>
<tr><td></td><td>Additionally, the diazinon criteria selected as numeric targets are currently under review by the USEPA. If water quality objectives become available, the Regional Board may reconsider this TMDL and revise the water toxicity numeric target.</td></tr>
<tr><td>Source Analysis</td><td>Source analysis determined that agricultural and urban uses are the largest sources of chlorpyrifos and diazinon in the watershed. Urban use of diazinon and chlorpyrifos is unlikely to be a long-term source to the Calleguas Creek Watershed (CCW) as both of these pesticides have been banned for sale for non-agricultural uses on December 31, 2005 by federal regulation. As a result, the proportion of the loading from urban sources will likely decrease after December 2005.

Chlorpyrifos – Sources by Use

<table>
<tr><th></th><th>Dry Weather</th><th>Wet Weather</th></tr>
<tr><td>Agriculture</td><td>66%</td><td>80%</td></tr>
<tr><td>Urban</td><td>23%</td><td>20%</td></tr>
<tr><td>POTW</td><td>11%</td><td><1%</td></tr>
<tr><td>Other</td><td><1%</td><td><1%</td></tr>
</table>

Diazinon – Sources by Use

<table>
<tr><th></th><th>Dry Weather</th><th>Wet Weather</th></tr>
<tr><td>Agriculture</td><td>30%</td><td>1%</td></tr>
<tr><td>Urban</td><td>13%</td><td>62%</td></tr>
<tr><td>POTW</td><td>57%</td><td>37%</td></tr>
<tr><td>Other</td><td><1%</td><td><1%</td></tr>
</table>
</td></tr>
<tr><td>Linkage Analysis</td><td>Water quality modeling established the linkage of sources of chlorpyrifos and diazinon in the CCW to observed water quality data. The linkage analysis qualitatively describes the connection between water column concentrations and sediment and fish tissue concentrations. The qualitative analysis demonstrates that the water column analysis conducted by laboratories implicitly includes sediment associated diazinon and chlorpyrifos loads transported to receiving waters as almost all water quality data do not differentiate between dissolved and particulate fractions. The linkage analysis assumes a reduction in water column concentrations will result in a reduction in fish tissue as chlorpyrifos in freshwater fish tissue rapidly depurate within several days of removal from exposure. Additionally, as chlorpyrifos preferentially binds to sediment the linkage analysis suggests that sediment concentrations of</td></tr>
</table>

<table>
<tr><th>TMDL Element</th><th>Calleguas Creek Watershed Toxicity TMDL</th></tr>
<tr><td></td><td>chlorpyrifos will need to decrease to achieve water quality numeric targets. The modeling approach reflects the uncertainty in current conditions and the potential impacts of watershed planning actions that may affect those conditions. A detailed description of the model is provided in an Attachment to the TMDL Technical Report.</td></tr>
<tr><td>Wasteload Allocations (WLA)</td><td><u>Major point sources:</u>

A wasteload of 1.0 TU_c is allocated to the major point sources (POTWs) discharging to the Calleguas Creek Watershed.

Additionally, the following wasteloads for chlorpyrifos and diazinon are established for POTWs. A margin of safety of 5% was included in the targets for chlorpyrifos for discharges to the Calleguas and Revolon subwatersheds.

<u>Chlorpyrifos WLAs, ug/L</u>

<table>
<tr><th>POTW</th><th>Interim WLA</th><th>Final WLA</th></tr>
<tr><td>Hill Canyon WWTP</td><td>0.030</td><td>0.014</td></tr>
<tr><td>Simi Valley WQCP</td><td>0.030</td><td>0.014</td></tr>
<tr><td>Ventura County (Moorpark) WTP</td><td>0.030</td><td>0.014</td></tr>
<tr><td>Camarillo WRP</td><td>0.030</td><td>0.0133</td></tr>
<tr><td>Camrosa WRP</td><td>0.030</td><td>0.0133</td></tr>
</table>
<u>Diazinon WLAs, ug/L</u>

<table>
<tr><th>POTW</th><th>Interim Acute (1 hour)</th><th>Interim Chronic (4 day)</th><th>Final WLA (Acute or Chronic)</th></tr>
<tr><td>Hill Canyon WWTP</td><td>0.567</td><td>0.312</td><td>0.10</td></tr>
<tr><td>Simi Valley WQCP</td><td>0.567</td><td>0.312</td><td>0.10</td></tr>
<tr><td>Ventura County (Morepark) WTP</td><td>0.567</td><td>0.312</td><td>0.10</td></tr>
<tr><td>Camarillo WRP</td><td>0.567</td><td>0.312</td><td>0.10</td></tr>
<tr><td>Camrosa WRP</td><td>0.567</td><td>0.312</td><td>0.10</td></tr>
</table>
A wasteload of 1.0 TU_c is allocated to Urban Stormwater Co-Permittees (MS4) discharges to the Calleguas Creek Watershed.</td></tr>
</table>

TENTATIVE

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
	Additionally, the following wasteloads for chlorpyrifos and diazinon are established for MS4 discharges. **Chlorpyrifos WLAs, ug/L** Interim WLA: 0.45 — Final WLA: 0.014 **Diazinon WLAs, ug/L** Interim WLA Acute (1 hour): 1.73 — Interim WLA Chronic (4 day): 0.556 — Final WLA Acute and Chronic: 0.10 **Minor point sources:** Minor sources include NPDES permittees other than POTWs and MS4s, discharging to the Calleguas Creek Watershed. A wasteload of 1.0 TU_c is allocated to the minor point sources discharging to the Calleguas Creek Watershed. Additionally, the following wasteloads for chlorpyrifos and diazinon are established. **Chlorpyrifos WLAs, ug/L** Interim WLA: 0.45 — Final WLA: 0.014 **Diazinon WLAs, ug/L** Interim WLA Acute (1 hour): 1.73 — Interim WLA Chronic (4 day): 0.556 — Final WLA Acute and Chronic: 0.10
Load Allocations	**Non Point Source Dischargers:** A load of 1.0 TU_c is allocated to nonpoint sources discharging to the Calleguas Creek Watershed. Additionally, the following loads for chlorpyrifos and diazinon are established. These loads apply to dischargers in accordance with the subwatershed into which the dischargers discharge. A margin of

TENTATIVE

<table>
<tr><th>TMDL Element</th><th>Calleguas Creek Watershed Toxicity TMDL</th></tr>
<tr><td></td><td>safety of 5% was included for chlorpyrifos for discharges to the Calleguas and Revolon subwatersheds.

<u>Chlorpyrifos Load Allocations, ug/L</u>

<table>
<tr><th>Subwatershed</th><th>Interim
Acute (1hour)</th><th>Interim
Chronic(4 day)</th><th>Final
Acute and Chronic</th></tr>
<tr><td>Arroyo Simi</td><td>2.57</td><td>0.810</td><td>0.014</td></tr>
<tr><td>Las Posas</td><td>2.57</td><td>0.810</td><td>0.014</td></tr>
<tr><td>Conejo</td><td>2.57</td><td>0.810</td><td>0.014</td></tr>
<tr><td>Calleguas</td><td>2.57</td><td>0.810</td><td>0.0133</td></tr>
<tr><td>Revolon</td><td>2.57</td><td>0.810</td><td>0.0133</td></tr>
<tr><td>Mugu Lagoon</td><td>2.57</td><td>0.810</td><td>0.014</td></tr>
</table>

<u>Diazinon Load Allocations, ug/L</u>

<table>
<tr><th>Interim LA
Acute</th><th>Interim LA
Chronic</th><th>Final LA
Acute and Chronic</th></tr>
<tr><td>0.278</td><td>0.138</td><td>0.10</td></tr>
</table>
</td></tr>
<tr><td>Margin of Safety</td><td>In addition to the implicit margin of safety achieved by conservative assumptions and by using a concentration based TMDL, an explicit margin of safety of 5% has been added to the targets for chlorpyrifos in the Calleguas and Revolon subwatersheds to address uncertainty in the linkages between the water column criteria and fish tissue and sediment concentrations. The Calleguas and Revolon subwatersheds include those reaches listed for sediment toxicity and chlorpyrifos in fish tissue.</td></tr>
<tr><td>Future Growth</td><td>Ventura County accounts for slightly more than 2% of the state's residents with a population of 753,197 (US Census Bureau, 2000). GIS analysis of the 2000 census data yields a population estimate of 334,000 for the CCW, which equals about 44% of the county population. According to the Southern California Association of Governments (SCAG), growth in Ventura County averaged about 51% per decade from 1900-2000; with growth exceeding 70% in the 1920s, 1950s, and 1960s. The phase-out of chlorpyrifos and diazinon is expected to reduce loads from urban and POTWs significantly by 2007. Use of diazinon in agriculture has declined considerably between 1998 and 2003. Conversely, chlorpyrifos use in agriculture has remained relatively stable over the same period. The phase out of chlorpyrifos and diazinon as well as population growth will cause an increase in the use of replacement pesticides</td></tr>
</table>

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
	(e.g. pyrethroids) in the urban environment and may have an impact on water and/or sediment toxicity. Additionally, population growth may affect an increase in the levels of chlorpyrifos and diazinon loading in the CCW from imported products which contain residues of these pesticides.
Critical Conditions	The critical condition in this TMDL is defined as the flowrate at which the model calculated the greatest in-stream diazinon or chlorpyrifos concentration in comparison to the appropriate criterion. The critical condition for chlorpyrifos was in dry weather based on a chronic numeric target; the critical condition for diazinon was in wet weather based on an acute numeric target except in Mugu Lagoon where it was in dry weather based on the chronic numeric target.
Implementation Plan	WLAs established for the major points sources, including POTWs in the CCW will be implemented through NPDES permit effluent limits. The final WLAs will be included in NPDES permits in accordance with the compliance schedules provided. The Regional Board may revise these WLAs based on additional information as described in the Special Studies and Monitoring Section of the Technical Report. The toxicity WLAs will be implemented in accordance with US EPA, State Board and Regional Board resolutions, guidance and policy at the time of permit issuance or renewal. Currently, these WLAs would be implemented as a trigger for initiation of the TRE/TIE process as outlined in USEPA's "Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program" (2000) and current NPDES permits held by dischargers to the CCW. Stormwater WLAs will be incorporated into the NPDES permit as receiving water limits measured in-stream at the base of each subwatershed and will be achieved through the implementation of BMPs as outlined below. Evaluation of progress of the TMDL will be determined through the measurement of in-stream water quality and sediment at the base of each of the CCW subwatersheds. The Regional Board may revise these WLAs based on additional information developed through special studies and/or monitoring conducted as part of the TMDL. As shown in the attached table the following implementation actions will be taken by the MS4s discharging to the CCW and

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
	POTWs located in the CCW: ▪ Plan, develop, and implement an urban pesticides public education program; ▪ Plan, develop, and implement urban pesticide education and chlorpyrifos and diazinon collection program; ▪ Study diazinon and chlorpyrifos replacement pesticides for use in the urban environment; and, ▪ Conduct environmental monitoring as outlined in the Monitoring Plan and NPDES Permits. LAs for chlorpyrifos and diazinon will be implemented through the State's Nonpoint Source Pollution Control Program (NPSPCP), nonpoint source pollution (i.e. Load Allocations). The LARWQCB is currently developing a Conditional Waiver for Irrigated Lands. Once adopted, the Conditional Waiver Program will implement allocations and attain numeric targets of this TMDL. Compliance with LAs will be measured at the monitoring sites approved by the Executive Officer of the Regional Board through the monitoring program developed as part of the Conditional Waiver, or through a monitoring program that is required by this TMDL. The toxicity LAs will be implemented in accordance with US EPA, State Board and Regional Board resolutions, guidance and policy at the time of permit or waiver issuance or renewal. The following implementation actions will be taken by agriculture dischargers located in the CCW: ▪ Enroll for coverage under a waiver of waste discharge requirements for irrigated lands; ▪ Implement monitoring required by this TMDL and the Conditional Waiver program; ▪ Complete studies to determine the most appropriate BMPs given crop type, pesticide, site specific conditions, as well as the critical condition defined in the development of the LAs; and, ▪ Implement appropriate BMPs and monitor to evaluate effectiveness on in-stream water and sediment quality. The Regional Board may revise this TMDL based on monitoring data and special studies of this TMDL. If the Regional Board revises NPDES permits or the Basin Plan to use other methods of evaluating toxicity or if other information supporting other methods becomes available, the Regional Board may reconsider this TMDL and revise the water toxicity numeric target. Additionally, the

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
	development of sediment quality guidelines or criteria and other water quality criteria revisions may call for the reevaluation of the TMDL. The Implementation Plan includes this provision for reevaluating the TMDL to consider sediment quality guidelines or criteria and revised water quality objectives and the results of implementation studies, if appropriate.

Table 7-16.2. Overall Implementation Schedule for Calleguas Creek Watershed Toxicity TMDL

Implementation Action		Responsible Party	Date
1	Interim chlorpyrifos and diazinon waste-load allocations apply.[1]	POTW permittees and MS4 Copermittees	Effective date[2]
2	Interim chlorpyrifos and diazinon load allocations apply.[1]	Agricultural Dischargers	Effective date[2]
3	Finalize and submit workplan and initiate integrated Calleguas Creek Watershed Monitoring Program for approval by the Regional Board Executive Officer. [3]	POTW permittees, MS4 Copermittees, and Agricultural Dischargers	1 year after effective date[2]
4	Special Study #1 - Investigate the pesticides that will replace diazinon and chlorpyrifos in the urban environment, their potential impact on receiving waters, and potential control measures.	POTW permittees and MS4 Copermittees	2 years after effective date[2]
5	Special Study #2 – Complete monitoring of sediment concentrations by source/land use type through special study required in the OC Pesticide, PCB and siltation TMDL Implementation Plan. [3]	Agricultural Dischargers[3] and MS4 Copermittees	2 years after effective date[2]
6	Develop and implement collection program for diazinon and chlorpyrifos and an educational program. Collection and education could occur through existing programs such as household hazardous waste collection events	POTW permittees and MS4 Copermittees	3 years after effective date[2]
7	Develop an Agricultural Water Quality Management Plan in conjunction with the Conditional Waiver for Irrigated Lands, or (if the Conditional Waiver is not adopted in a timely manner) develop an Agricultural Water Quality Management Plan as part of the Calleguas Creek WMP.	Agricultural Dischargers[3]	3 years after effective date[2]
8	Identify the most appropriate BMPs given crop type, pesticide, site specific conditions, as well as the critical condition defined in the development of the LAs.	Agricultural Dischargers[3]	2 years after effective date[2]
9	Implement educational program on BMPs identified in the Agricultural Water Quality Management Plan.	Agricultural Dischargers	3 years after effective date[2]
10	Special Study #3 Calculation of sediment transport rates in CCW. Consider findings of transport rates developed through the OC Pesticide, PCB and siltation TMDL Implementation Plan [3]	Agricultural Dischargers[3] and MS4 Copermittees	5 years after effective date[2]
11	Begin implementation of BMPs.	Agricultural Dischargers[3]	3 years after effective date[2]
12	Evaluate effectiveness of BMPs.	Agricultural Dischargers[3]	5 years after effective date[2]
13	Based on monitoring data and on the results of	Stakeholders and	2 years after the submittal of

[1] Interim WLAs and LAs are effective immediately upon TMDL adoption. WLAs will be placed in POTW NPDES permits as effluent limits. WLAs will be placed in stormwater NPDES permits as in-stream limits. LAs will be implemented using applicable regulatory mechanisms.

[2] Effective date of this TMDL.

[3] Regional Board regulatory programs addressing agricultural discharges that are in effect at the time this implementation task is due may contain requirements that are substantially similar to the requirements of this implementation task. If such requirements are in place in another regulatory program, the Executive Officer may revise or eliminate this implementation task to coordinate this TMDL implementation plan with other regulatory programs.

Implementation Action		Responsible Party	Date
	Implementation Actions 1-12 and if sediment guidelines are promulgated, reevaluate the TMDLs, interim or final WLAs and LAs and implementation schedule, if necessary.	Regional Board	information necessary to reevaluate the TMDL
14	Achievement of Final WLAs	POTW permittees and MS4 Copermittees	2 years after the effective date of the TMDL[2]
15	Achievement of Final LAs	Agricultural Dischargers	10 years after the effective date of the TMDL[2]